

REMARKS

By this Amendment, claim 2 has been cancelled and claim 1 has been amended, leaving claims 1 and 3-5 pending in the application. Reconsideration of the June 21, 2004 Office Action is respectfully requested in view of the following remarks.

First Rejection Under 35 U.S.C. § 102

Claims 1, 2, 3/1, 3/2, 5/3/1 and 5/3/2 stand rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 4,992,026 to Ohtomo et al. ("Ohtomo"). Claim 2 has been cancelled and claim 3 has been amended to depend from claim 1. The rejection is respectfully traversed with respect to claims 1, 3 and 5.

Claim 1, as amended, recites a component of a fluid flow machine, which comprises "a coolant passage comprising at least one curved flow section; and a second passage comprising an inspection aperture, the inspection aperture being arranged and dimensioned to enable the introduction of a borescope through the inspection aperture and the second passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to the curved flow section."

Support for the amendments to claim 1 is provided, for example, in FIGs. 1 and 2 and the specification. For example, in the exemplary embodiment of the claimed component shown in FIG. 1, a cooling medium can be flowed through the channel (or passage) 4. The passage 4 is tangent to a curved flow section of the coolant passage (see the attachment to the Amendment filed on April 8, 2004) and also branches off the coolant passage at the curved flow section. A cooling medium

can flow along the passage 4 and the curved flow section. However, dirt or dust particles can pass through the aperture 5 due to their inertia, thereby removing particles from the cooling medium.

FIG. 2 depicts another exemplary embodiment of the claimed component comprising a channel (or passage) 7, which is tangent to a curved flow section of a coolant passage 4 (see the attachment to the April 8, 2004 Amendment), and also branches off the coolant passage at the curved flow section.

Ohtomo fails to disclose each and every feature recited in claim 1. Particularly, the Office Action refers to FIG. 1 of Ohtomo, which shows a gas turbine blade main body 10 including a first cooling air passage 28 with a first passage portion 34, a communicating passage portion 36 and a final passage portion 40. The Office Action asserts that the passages comprise at least one curved flow section 36/40 adjacent to the unnumbered blade platform. An outlet port 38 is at the end of the final passage portion 40. The Office Action further asserts that the outlet port 38 is an "inspection aperture" through which inspection of the interior of the component is made possible. Applicants respectfully disagree.

The main body 10 does not include "a second passage comprising an inspection aperture, the inspection aperture being arranged and dimensioned to enable the introduction of a borescope through the inspection aperture and the second passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to the curved flow section" (emphasis added). For example, the final passage portion 40 does not branch off "a coolant passage comprising at least one curved flow section." In contrast, the final passage 40 provides the final portion of the single flow path (that

consists of the first passage portion 34, communicating passage portion 36 and final passage portion 40) through which cooling air passes through the first cooling air passage 28.

Thus, Ohtomo does not anticipate the component of claim 1. Dependent claims 3 and 5 also are not anticipated by Ohtomo for at least the same reasons as those stated regarding claim 1. Therefore, withdrawal of the rejection is respectfully requested.

Second Rejection Under 35 U.S.C. § 102

Claims 1, 2, 3/1, 3/2, 4/3/1 and 4/3/2 stand rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,603,606 to Glezer ("Glezer"). The rejection is respectfully traversed with respect to claims 1, 3 and 4.

Glezer discloses a turbine cooling system. The Office Action asserts that the blade 114 (FIG. 5) includes "cooling channels" 166, 168 and 170 (i.e., first radial gallery 166, second radial gallery 168 and horizontal gallery 170); at least one "curved flow section" 168/170/174; and an "inspection aperture" 178 (i.e., exit opening 178). The Office Action further asserts that the "inspection aperture" 178 is arranged essentially tangentially to the "curved flow section" curvature. Applicants respectfully disagree.

Glezer's turbine cooling system does not include "a second passage comprising an inspection aperture, the inspection aperture being arranged and dimensioned to enable the introduction of a borescope through the inspection aperture and the second passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to

the curved flow section" (emphasis added). For example, the horizontal gallery 170 with the exit opening 178 does not branch off "a coolant passage comprising at least one curved flow section." In contrast, the horizontal gallery 170 is the final portion of the single flow path (that consists of the first radial gallery 166, second radial gallery 168 and the horizontal gallery 170) through which cooling air passes.

Thus, Glezer does not anticipate the component of claim 1. Dependent claims 3 and 4 also are not anticipated by Glezer for at least the same reasons as those stated regarding claim 1. Therefore, withdrawal of the rejection is respectfully requested.

Third Rejection Under 35 U.S.C. § 102

Claims 1, 2, 3/1, 3/2, 4/3/1 and 4/3/2 stand rejected under 35 U.S.C. § 102(b) over JP 64-66401-A (figures 1-2) ("JP 401"). The rejection is respectfully traversed with respect to claims 1, 3 and 4.

The Office Action asserts that JP 401 discloses a "component" 1 (i.e., blade 1) comprising "cooling channels" 12, 15 and 18; at least one "curved flow section" 15/18; and an "inspection aperture" near 18. The Office Action further asserts that the "inspection aperture" is arranged essentially in a direction tangentially to the "curved flow section" curvature. Applicants respectfully disagree.

The blade 1 disclosed in JP 401 does not include "a second passage comprising an inspection aperture, the inspection aperture being arranged and dimensioned to enable the introduction of a borescope through the inspection aperture and the second passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to

the curved flow section" (emphasis added). For example, passage 18 having an alleged "inspection aperture" does not branch off "a coolant passage comprising at least one curved flow section," as claimed. Rather, two side-by-side portions of the first passage 9 located on opposite sides of fins 13, and through which fluid flows in the same upward direction in FIG. 1, feed into the passage 18. The passage 18 thus forms the final portion of the first passage through which the fluid can pass, and does not "branch off" a coolant passage including a curved flow section.

Thus, JP 401 does not anticipate the component of claim 1. Dependent claims 3 and 4 also are not anticipated by JP 401 for at least the same reasons as those stated regarding claim 1. Therefore, withdrawal of the rejection is respectfully requested.

Fourth Rejection Under 35 U.S.C. § 102

Claims 1, 2, 3/1, 3/2, 5/3/1 and 5/3/2 stands rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,797,726 to Lee ("Lee"). The rejection is respectfully traversed with respect to claims 1, 3 and 5.

The Office Action asserts that Lee discloses a "component" 14 (i.e., airfoil blade 14) comprising "cooling channels" 30, 32 (i.e., cooling passages 30, 32); and at least one "curved flow section" in line with "inspection aperture" 46 (i.e., hole 46). See FIG. 2 of Lee. The Office Action further asserts that the "inspection aperture" is arranged essentially in a direction tangentially to the "curved flow section" curvature. Applicants respectfully disagree.

Lee's component 14 does not include "a second passage comprising an inspection aperture, the inspection aperture being arranged and dimensioned to

enable the introduction of a borescope through the inspection aperture and the second passage, and the second passage (i) branching off the coolant passage at the curved flow section and (ii) being arranged as a tangent to the curved flow section” (emphasis added). For example, the cooling passage that terminates in hole 46 does not branch off “a coolant passage comprising at least one curved flow section.” In contrast, the passage that terminates at hole 46 is the final passage of the flow path beginning at one end at inlet 44, as represented by the arrows shown in FIG. 2.

Thus, Lee does not anticipate the component of claim 1. Dependent claims 3 and 4 also are not anticipated by Lee for at least the same reasons as those stated regarding claim 1. Therefore, withdrawal of the rejection is respectfully requested.

Fifth Rejection Under 35 U.S.C. § 102

Claims 1, 2, 3/1, 3/2, 5/3/1 and 5/3/2 stand rejected under 35 U.S.C. § 102(b) over the brochure “Air-Cooling of Gas Turbine Blades” (“Air Cooling”). The rejection is respectfully traversed with respect to claims 1, 3 and 5.

The Office Action refers to Figure 2, top and bottom right-hand blades, as shown in Air Cooling. The Office Action asserts that Air Cooling discloses a component comprising unnumbered cooling channels, “at least one curved flow section “adjacent the unnumbered blade platform,” and an unnumbered “inspection aperture being arranged essentially in a direction tangentially to the curved flow section curvature.” Applicants respectfully disagree.

The gas turbine blade shown in Figure 2 of Air Cooling, which is referred to in the Office Action, at the least does not include a second passage “being arranged as

a tangent to the curved flow section." In contrast, the depicted gas turbine blade of Air Cooling includes openings arranged perpendicular to a curved coolant passage flow section, not as a tangent. The claimed tangent arrangement of the second passage with respect to the curved flow section of the coolant passage allows dirt and debris to be separated by inertial force.

Thus, Air Cooling does not anticipate the component of claim 1. Dependent claims 3 and 4 also are not anticipated by Air Cooling for at least the same reasons as those stated regarding claim 1. Therefore, withdrawal of the rejection is respectfully requested.

Conclusions

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, the Examiner is respectfully requested to telephone the undersigned at the number given below.

Respectfully submitted,

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Date: October 13, 2004

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